

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

C1
has a moisture content of between about 20 to about 60 weight percent and the cereal has germinated for about 2 to about 7 days at a temperature of from about 10 to about 30°C. and after the germination, the combination [thereafter] is dried to a moisture content of from about 2 to about 15 weight percent.

In the first line of claim 9, please delete "claims 1, 2 or 4" and insert --claim 1 or 4--.

13. (Once Amended) A process for the preparation of a malted cereal said process comprising [the steps of]:
(a) introducing [an] activated [spore] spores into a moistened cereal [to provide an inoculated moistened cereal] to form a moistened cereal/activated spore combination;
(b) germinating [said inoculated] the cereal in the moistened cereal/activated spore combination to provide a germinated cereal; and
(c) drying said germinated cereal.

C2
14. (Once Amended) The process according to claim 13, wherein said [inoculated] moistened cereal/activated spore combination is held at a temperature of from about 5° to about 30°C until the cereal has a moisture content of from about 20 to about 60 weight percent moisture.

15. (Once Amended) The process according to claim 13 or claim 14, wherein [said germinating step (b) is carried out] the moistened cereal/activated spore combination is held for about 3 to about 6 days at a temperature of from about 10° to about 30°C.

16. (Once Amended) The process according to [any one of Claim[s] 13 or 14 [to 15], wherein said germinated cereal is dried to a moisture content of from about 2 to about 15 weight percent.

sub C3
C3
18. (Once Amended) A process for the preparation of a malted cereal said process comprising: [the step of moistening] mixing water, a cereal and activated spores to provide a moistened cereal/activated spore combination and holding moistened cereal/activated spore combination for a time and at a temperature, [wherein] the amount [concentration] of the activated spores, [moistening] holding time and [moistening] holding temperature [are] effective for providing the malted cereal with an increase in activity of an enzyme compared to the activity of an enzyme obtained by moistening the cereal without activated spores.

C4
20. (Once Amended) A process as recited in claim 18, wherein the [cereal moistening] holding time and holding temperature are effective to provide the cereal with a moisture content of at least about 20 weight percent.

C5
22. (Once Amended) A process as recited in claims 18, 19, 20, or 21, wherein the [moistening] holding time and holding temperature are effective to provide the cereal with a moisture content of between about 20 to about 60 weight percent and wherein the cereal has germinated for about 2 to about 7 days at a temperature of from about 20 to about 30°C.

23. (Once Amended) A process as recited in claim 22, wherein the germinated cereal is dried to a moisture content of from about 2 to about 15 weight percent.

C6
28. (Once Amended) A [P]process according to claim 27, wherein the cereal is barley and, [for the preparation of malted barley,] wherein the bacteria are selected from the group comprising Micrococcus spp., streptococcus spp., Leuconostoc spp., Pediococcus spp. preferentially Pediococcus halophilus, Pediococcus cerevisiae, Pediococcus spp. preferentially Pediococcus halophilus, Pediococcus cerevisiae, Pediococcus damnosus, Pediococcus hemophilus, Pediococcus parvulus, Pediococcus soya, Lactococcus spp., Lactobacillus spp. preferentially Lactobacillus acidophilus, Lactobacillus

amylovorus, Lactobacillus bavaricus, Lactobacillus
bifermentans, Lactobacillus brevis var lindneri, Lactobacillus
casei var casei, Lactobacillus delbrueckii, Lactobacillus
delbrueckii var lactis, Lactobacillus delbrueckii var
bulgaricus, Lactobacillus fermenti, Lactobacillus gasserii,
Lactobacillus helveticus, Lactobacillus hilgardii,
Lactobacillus reuteri, Lactobacillus sake, Lactobacillus
sativorus, Lactobacillus cremoris, Lactobacillus kefir,
Lactobacillus pentoceticus, Lactobacillus cellobiosus,
Lactobacillus bruxellensis, Lactobacillus buchnerii,
Lactobacillus coryneformis, Lactobacillus confusus,
Lactobacillus florentinus, Lactobacillus viridescens,
Corynebacterium spp., Propionibacterium spp., Bifidobacterium
spp., Streptomyces spp., Bacillus spp., Sporofactobacillus
spp., Acetobacter spp., Agrobacterium spp., Alcaligenes spp.,
Pseudomonas spp. preferentially Pseudomonas amylophila,
Pseudomonas seruginosa, Pseudomonas cocovenenana, Pseudomonas
mexicana, Pseudomonas pseudomallei Gluconobacter spp.,
Enterobacter spp., Erwinia spp., Klebstella spp., and Proteus
spp.

CF

29. (Twice Amended) The process according to claim 27,
[for the preparation of malted] wherein the cereal is barley
and wherein the fungi are selected from the group consisting
of Ascomycota, Dothideales, Mycosphaerellaceae,
Mycosphaerella spp., Venturiaceae, Venturia spp.; Eurotiales,
Monascaceae, Monascus spp., Trichocomaceae, Emericella spp.,
Duroteum spp., Eupenicillium spp., Neosartorya spp.,
Talaromyces spp., Hypocreales, Hypocreaceae, Hypocrea spp.
Saccharomycetales, Dipodascaceae, Dipodascus spp.,
Galactomyces spp., Endomycetaceae, Endomyces spp.,
Metschnikowiaceae, Guilliermondella spp., Saccharomycetaceae
Debaryomyces spp., Dekkera spp., Pichia spp., Kluyveromyces
spp., Saccharomyces spp., Torulaspora spp., Zygosaccharomyces
spp., Saccharomycodaceae, Hanseniaspora spp.,
Schizosaccharomycetales, Schizosaccharymycetaceae,
Schizosaccharomyces spp., Sordariales, Chaetomiaceae,
Chaetomium spp., Sordariaceae, Neurospora spp., Zygomycota,

CP
Mucorales, Mucoraceae, Absidia spp., Amylomyces spp.,
Rhizomucor spp., Actinomucor spp., Thermomucor spp.,
Chlamydomucor spp., Mucor spp., Mucor circinelloides, Mucor
grisecyanus, Mucor hiemalis, Mucor Indicus, Mucor mucedo,
Mucor piriformis, Mucor plumbeus, Mucor praini, Mucor
pusillus, Mucor silvaticus, Mucor javanicus, Mucor racemosus,
Mucor rouxianus, Mucor rouxli, Mucor aromatiacus, Mucor
flavus, Mucor miehel, Rhizopus spp., Rhizopus arrhizus,
Rhizopus oligosporus, Rhizopus oryzae, strains ATCC 4858, ATCC
9363, NRRL 1891, NRRL 1472, Rhizopus stolonifer, Rhizopus
thailandensis, Rhizopus formosaensis, Rhizopus chinensis,
Rhizopus cohnii, Rhizopus japonicus, Rhizopus nodosus,
Rhizopus delemar, Rhizopus acetorinus, Rhizopus
chlamydosporus, Rhizopus circinans, Rhizopus javanicus,
Rhizopus peka, Rhizopus salto, Rhizopus tritiei, Rhizopus
niveus, Rhizopus microsporus, Mitosporic fungi preferentially
Aureobasidium spp., Acremonium spp., Cercospora sap.,
Epicoccum sap., Monilla sap., Monilla candida, Monilla
sitophila, Mycoderma sap., Candida sap., Candida diddensiae,
Candida edax, Candida etchellii, Candida kefir, Candida
krisei, Candida lactosa, Candida lambica, Candida mellinii,
Candida utilis, Candida milleri, Candida mycoderma, Candida
parapsilosis, Candida obtusa, Candida tropicalis, Candida
valida, Candida versatilis, Candida guilliermondii,
Rhodotorula sap., Torulopsis sap., Geotrichum sap., Geotrichum
amycelium, Geotrichum armillariae, Geotrichum asteroides,
Geotrichum bipunctatum, Geotrichum dulcimum, Geotrichum
eriense, Geotrichum fici, Geotrichum flavo-brunneum,
Geotrichum fragrans, Geotrichum gracile, Geotrichum heritum,
Geotrichum kiebakhii, Geotrichum penicillatum, Geotrichum
hirtum, Geotrichum pseudocandidum, Geotrichum rectangulatum,
Geotrichum suaveolens, Geotrichum vanrylae, Geotrichum
loubieri, Geotrichum microsporum, Cladosporium sap.,
Trichoderma sap., Trichoderma hamatum, Trichoderma harzianum,
Trichoderma koningii, Trichoderma pseudokoningii, Trichoderma
reesei, Trichoderma virgatum, Trichoderma viride, Oidium sap.,
Alternaria sap., Alternaria alternata, Alternaria tenuis,
Helminthosporium sap., Helminthosporium gramineum,

Helminthosporium sativum, Helminthosporium teres, Aspergillus sap., Aspergillus ochraceus Group, Aspergillus nidulans Group, Aspergillus versicolor Group, Aspergillus wentii Group, Aspergillus candidus Group, Aspergillus flavus Group, Aspergillus niger Group, Penicillium sap., Penicillium aculeatum, Penicillium citrinum, Penicillium claviforme, Penicillium funiculosum, Penicillium italicum, Penicillium lanoso-viride, Penicillium emersonii, Penicillium lilacinum, and Penicillium expansum.

30. (Once Amended) The process for the preparation of malted cereal according to claim 27 [for the preparation of malted cereals other than malted barley] wherein the bacteria are selected from the group comprising Micrococcus sap., Streptococcus sap., Leuconostoc sap., Pediococcus sap., Lactococcus sap., Lactobacillus sap., Corynebacterium sap., Propionibacterium sap., Bifidobacterium sap., Streptomyces sap., Bacillus sap., Sporolactobacillus sap., Gluconobacter sap., Enterobacter sap., Erwinia sap., Klebsiella sap., and Proteus sap.

Cp 31. (Twice Amended) A process for the preparation of malted cereal according to claim 27 [for the preparation of malted cereals other than malted barley] wherein the fungi are selected from the group consisting of Ascomycota, Dothideales, Mycosphaerellaceae, Mycosphaerella sap., Venturiaceae, Venturia spp., Eurotiales, Monascaceae, Monascus sap., Trichocomaceae, Emercilla sap., Euroteum sap., Eupencillium sap., Neosartorya sap., Talaromyces sap., Hypocreales, Hypocreaceae, Hypocrea sap., Saccharomycetales, Dipodascaceae, Dipodascus sap., Galactomyces sap., Endomycetaceae, Endomyces sap., Metschnikowiaceae, Guilliermondella sap., Saccharomycetaceae, Debaryomyces sap., Dekkera sap., Pichia sap., Klyveromyces sap., Sacchaaromyces sap., Torulaspora sap., Zygosaccharomyces sap., Sacchaaromycodaceae, Hanseniaspora sap., Schizosaccharomycetales, Schizosaccharomycetaceae, Schizosaccharomyces sap., Sordariales, Chaetomiaceae, Chaetomium sap., Sordariaceae,

C6
Neurospora sap., Zygomycota, Mucorales, Mucoraceae, Absidia sap., Amylomyces sap., Rhizomucor sap., Actinomucor sap., Thermomucor sap., Chlamydomucor sap., Mucor sap., Rhizopus sap., Mitosporic fungi, Aureobasidium sap., Acremonium sap., Cerocospora sap., Epicoccum sap., Monilla sap., Mycoderma sap., Candida sap., Rhodotorula sap., Torulopsis sap., Geotrichum sap., Cladosporium sap., Trichoderma sap., Oidium sap., Alternara sap., Helminthosporium sap., Aspergillus sap., and Penicillium sap.

C7
33. (Twice Amended) A process according to the claim 31 [32], wherein the Rhizopus spp. is Rhizopus oryzae.

Please add the following claims.
Please rewrite claim 2 as 43.

43. The process according to claim 1, wherein said activated spores increase an activity of an enzyme that is present in a cereal used during said malting process.

[Please rewrite claim 32 as 44.]

44. A process according to claim 27, 28, 29, 30 or 31, wherein the cereal is submersed in water to steep the cereal and a total time of submersion in the water during steeping does not exceed about 30 hours, and wherein the drying is at more than two temperatures and wherein the activated spores are from microbes selected from the group consisting of Rhizopus sap., Pseudomonas sap. and mixtures thereof.

C8
[Please rewrite claim 34 as 45.]

45. A process according to claim 28, wherein the Pseudomonas sp. is Pseudomonas herbicola.

[Please rewrite claim 35 as 46.]

46. A process according to claim 27, wherein the activated spores are activated by treatments selected from the group consisting of cycles of wetting and/or drying,

addition of nutritional supplies or addition of spore elements, exposure to temperature changes within a range of about 0° to about 80°C, and exposure to changes in pH within a pH range of about 2.0 to about 8.0 to obtain spores where the size of the spores is increased by a factor between about 1.2 and about 10 over their dormant size and/or the spores have one or more germ tubes per spore, and mixtures thereof.

C8

[Please rewrite claim 36 as 47.]

47. A process according to claim 27, wherein the pH during the steeping step is adjusted to a value between about 4.0 and about 6.0.

Also please add the following claims.

sub 65) 48. A method for the preparation of a malted cereal product, the method comprising:
mixing water, activated spores and a cereal to provide a malting cereal composition, wherein said activated spores increase an activity of an enzyme that is present in a cereal used during said malting process and the activated spores are present in the malting cereal composition in an amount of at least 1×10^8 per gram of air dry cereal, the amount of activated spores being effective for providing the malted cereal with the increased enzyme activity, the increased enzyme activity being greater than the enzyme activity which is obtained by a malting process without activated spores.

C9

49. The method as recited in claim 48, wherein said enzyme is selected from the group of β -glucanase, xylanase, amylase, protease, [naturally occurring enzymes in the cereal] and combinations thereof.

50. A method as recited in claim 49 wherein the activated spores are from the microbes selected from the group consisting of Micrococcus sap., Streptococcus sap., Leuconostoc sap., Pediococcus sap., Pediococcus halophilus, Pediococcus cerevisiae, Pediococcus damnosus, Pediococcus hemophilus, Pediococcus parvulus, Pediococcus soyae,

Lactococcus sap., Lactobacillus sap., Lactobacillus
 acidophilus, Lactobacillus amylovorus, Lactobacillus
 bavaricus, Lactobacillus bif fermentans, Lactobacillus brevis
 var lindneri, Lactobacillus casei var casei, Lactobacillus
 delbrueckii, Lactobacillus delbrueckii var lactis,
 Lactobacillus delbrueckii var bulgaricus, Lactobacillus
 fermenti, Lactobacillus gasserii, Lactobacillus helveticus,
 Lactobacillus hilgardii, Lactobacillus renterii, Lactobacillus
 sake, Lactobacillus sativorus, Lactobacillus cremoris,
 Lactobacillus kefir, Lactobacillus pentoceticus, Lactobacillus
 cellobiosus, Lactobacillus bruxellensis, Lactobacillus
 buchnerii, Lactobacillus coryneformis, Lactobacillus confusus,
 Lactobacillus florentinus, Lactobacillus viridescens,
 Corynebacterium sap., Propionibacterium sap., Bifidobacterium
 sap., Streptomyces sap., Bacillus sap., Sporolactobacillus
 sap., Acetobacter sap., Agrobacterium sap., Alcaligenes sap.,
 Pseudomonas sap., Pseudomonas amylophilia, Pseudomonas
 aeruginosa, Pseudomonas cocovenenans, Pseudomonas mexicana,
 Pseudomonas pseudomallei, Gluconobacter sap., Enterobacter
 sap., Erwinia sap., Klebsiella sap., Proteus sap., Ascomycota,
 Dothideales, Mycosphaerellaceae, Mycosphaerella sap.,
 Venturiaceae, Venturia sap., Eurotiales, Monascaceae,
 Monascus sap., Trichocomaceae, Emericella sap., Euroteum sap.,
 Eupenicillium sap., Neosartorya sap., Talaromyces sap.,
 Hypocreales, Hypocreaceae, Hypocrea sap., Saccharomycetales,
 Dipodascaceae, Dipodascus sap., Galactomyces sap.,
 Endomycetaceae, Endomyces sap., Metschnikowiaceae,
 Guilliermondella sap., Saccharomycetaceae, Debaryomyces sap.,
 Dekkera sap., Pichia sap., Kluyveromyces sap., Saccharomyces
 sap., Torulaspora sap., Zygosaccharomyces sap.,
 Saccharomycodaceae, Hanseniaspora sap.,
 Schizosaccharomycetales, Schizosaccharomycetaceae,
 Schizosaccharomyces sap., Sordariales, Chaetomiaceae,
 Chaetomium sap., Sordariaceae, Neurospora sap., Zygomycota,
 Mucorales, Mucoraceae, Absidia sap., Amylomyces sap.,
 Rhizomucor sap., Actinomucor sap., Thermomucor sap.,
 Chlamydomucor sap., Mucor sap., Mucor circinelloides, Mucor
 grisecyanus, Mucor hiemalis, Mucor indicus, Mucor mucedo,

C9

C9 Mucor piriformis, Mucor plumbeus, Mucor praini, Mucor pusillus, Mucor silvaticus, Mucor javanicus, Mucor racemosus, Mucor rouxianus, Mucor rouxii, Mucor aromaticus, Mucor flavus, Mucor miehei, Rhizopus sap., Rhizopus arrhizus, Rhizopus oligosporus, Rhizopus oryzae, Rhizopus oryzae strain ATCC 4858, Rhizopus oryzae strain ATCC 9363, Rhizopus oryzae strain NRRL 1891, Rhizopus oryzae strain NRRL 1472, Rhizopus stolonifer, Rhizopus thailandensis, Rhizopus formosaensis, Rhizopus chinensis, Rhizopus cohnii, Rhizopus japonicus, Rhizopus nodosus, Rhizopus delemar, Rhizopus acetorinus, Rhizopus chlamydosporus, Rhizopus circinans, Rhizopus javanicus, Rhizopus peka, Rhizopus saito, Rhizopus tritici, Rhizopus niveus, Rhizopus microsporus, Mitosporic fungi, Aureobasidium sap., Acremonium sap., Cercospora sap., Epicoccum sap., Monilia sap., Monilia candida, Monilia sitophila, Mycoderma sap., Candida sap., Candida diddensiae, Candida edax, Candida etchellsii, Candida kefir, Candida krisei, Candida lactosa, Candida lambica, Candida melinii, Candida utilis, Candida milleri, Candida mycoderma, Candida parapsilosis, Candida obtux, Candida tropicalis, Candida valida, Candida versatilis, Candida guilliermondii, Rhodotorula sap., Torulopsis sap., Geotrichum sap., Geotrichum amycelium, Geotrichum armillariae, Geotrichum asteroides, Geotrichum bipunctatum, Geotrichum dulcitum, Geotrichum erienne, Geotrichum fici, Geotrichum flavo-brunneum, Geotrichum fragrans, Geotrichum gracile, Geotrichum heritum, Geotrichum klebaknii, Geotrichum penicillatum, Geotrichum hirtum, Geotrichum pseudocandidum, Geotrichum rectangulatum, Geotrichum suaveolens, Geotrichum vanryiae, Geotrichum loubieri, Geotrichum microsporum, Cladosporium sap., Trichoderma sap., Trichoderma hamatum, Trichoderma harzianum, Trichoderma koningii, Trichoderma pseudokoningii, Trichoderma reesei, Trichoderma virgatum, Trichoderma viride, Oidium sap., Alternaria sap., Alternaria alternata, Alternaria tenuis, Helminthosporium sap., Helminthosporium gramineum, Helminthosporium sativum, Helminthosporium teres, Aspergillus sap., Aspergillus ochraceus, Aspergillus nidulans, Aspergillus versicolor, Aspergillus wentii Group, Aspergillus candidus,

Aspergillus flavus, *Aspergillus niger*, *Aspergillus oryzae* strain ATCC 14156, *Penicillium* sap., *Penicillium aculeatum*, *Penicillium citrinum*, *Penicillium claviforme*, *Penicillium funiculosum*, *Penicillium italicum*, *Penicillium lanoso-viride*, *Penicillium emersonii*, *Penicillium lilacinum*, *Penicillium expansum* and mixtures thereof.

51. A method for the preparation of a malted cereal as recited in claims 48, 49 or 50 wherein the malting cereal composition is held with water at a temperature of from about 5°C to about 30°C for a time effective for providing a wetted cereal having a moisture content of at least about 20 weight percent.

52. A method for the preparation of a malted cereal as recited in claim 51 wherein the malting cereal composition is held for about 2 to about 7 days.

C9
Sus P27

~~53. A method as recited in claim 52 wherein, the activated spores are activated by treatments selected from the group consisting of~~
~~cycles of wetting,~~
~~cycles of drying,~~
~~cycles of wetting and drying,~~
~~addition of nutritional supplies or addition of spore elements,~~
~~exposure to temperature changes within a range of about 0° to about 80°C,~~
~~exposure to changes in pH within a pH range of about 2.0 to about 8.0 to obtain spores where the size of the spores is increased by a factor between about 1.2 and about 10 over their dormant size and/or the spores have one or more germ tubes per spore, and mixtures thereof.~~

54. A method as recited in claims 48, 49, or 50 wherein the cereal is barley.

55. A method as recited in claim 53 wherein the cereal

is barley.

56. A method for the preparation of a malted cereal, the method comprising:

mixing water, activated spores and a cereal to provide a malting cereal composition, the activated spores being present in an amount of at least about 1×10^7 per gram of air dry cereal to provide a malting cereal composition.

57. A method as recited in claim 56 wherein the activated spores are from the microbes selected from the group consisting of Micrococcus sap., Streptococcus sap., Leuconostoc sap., Pediococcus sap., Pediococcus halophilus, Pediococcus cerevisiae, Pediococcus damnosus, Pediococcus hemophilus, Pediococcus parvulus, Pediococcus soya, Lactococcus sap., Lactobacillus sap., Lactobacillus acidophilus, Lactobacillus amylovorus, Lactobacillus bavaricus, Lactobacillus bif fermentans, Lactobacillus brevis var lindneri, Lactobacillus casei var casei, Lactobacillus delbrueckii, Lactobacillus delbrueckii var lactis, Lactobacillus delbrueckii var bulgaricus, Lactobacillus fermenti, Lactobacillus gasserii, Lactobacillus helveticus, Lactobacillus hilgardii, Lactobacillus reuteri, Lactobacillus sake, Lactobacillus sativorus, Lactobacillus cremoris, Lactobacillus kefir, Lactobacillus pentoceticus, Lactobacillus cellobiosus, Lactobacillus bruxellensis, Lactobacillus buchnerii, Lactobacillus coryneformis, Lactobacillus confusus, Lactobacillus florentinus, Lactobacillus viridescens, Corynebacterium sap., Propionibacterium sap., Bifidobacterium sap., Streptomyces sap., Bacillus sap., Sporolactobacillus sap., Acetobacter sap., Agrobacterium sap., Alcaligenes sap., Pseudomonas sap., Pseudomonas amylophilia, Pseudomonas aeruginosa, Pseudomonas cocovenenans, Pseudomonas mexicana, Pseudomonas pseudomallei, Gluconobacter sap., Enterobacter sap., Erwinia sap., Klebsiella sap., Proteus sap., Ascomycota, Dothideales, Mycosphaerellaceae, Mycosphaerella sap., Venturiaceae, Venturia sap., Eurotiales, Monascaceae, Monascus sap., Trichocomaceae, Emericilla sap., Euroteum sap.,

Eupenicillium sap., Neosartorya sap., Talaromyces sap.,
 Hypocreales, Hypocreaceae, Hypocrea sap., Saccharomycetales,
 Dipodascaceae, Dipodascus sap., Galactomyces sap.,
 Endomycetaceae, Endomyces sap., Metschnikowiaceae,
 Guilliermondella sap., Saccharomycetaceae, Debaryomyces sap.,
 Dekkera sap., Pichia sap., Kluyveromyces sap., Saccharomyces
 sap., Torulaspora sap., Zygosaccharomyces sap.,
 Saccharomycodaceae, Hanseniaspora sap.;
 Schizosaccharomycetales, Schizosaccharomycetaceae,
 Schizosaccharomyces sap., Sordariales, Chaetomiaceae,
 Chaetomium sap., Sordariaceae, Neurospora sap., Zygomycota,
 Mucorales, Mucoraceae, Absidia sap., Amylomyces sap.,
 Rhizomucor sap., Actinomucor sap., Thermomucor sap.,
 Chlamydomucor sap., Mucor sap., Mucor circinelloides, Mucor
 grisecyanus, Mucor hiemalis, Mucor indicus, Mucor mucedo,
 Mucor piriformis, Mucor plumbeus, Mucor praini, Mucor
 pusillus, Mucor silvaticus, Mucor javanicus, Mucor racemosus,
 Mucor rouxianus, Mucor rouxii, Mucor aromaticus, Mucor flavus,
 Mucor miehei, Rhizopus sap., Rhizopus arrhizus, Rhizopus
 oligosporus, Rhizopus oryzae, Rhizopus oryzae strain ATCC
 4858, Rhizopus oryzae strain ATCC 9363, Rhizopus oryzae strain
 NRRL 1891, Rhizopus oryzae strain NRRL 1472, Rhizopus
 stolonifer, Rhizopus thailandensis, Rhizopus formosaensis,
 Rhizopus chinensis, Rhizopus cohnii, Rhizopus japonicus,
 Rhizopus nodosus, Rhizopus delemar, Rhizopus acetorinus,
 Rhizopus chlamydosporus, Rhizopus circinans, Rhizopus
 javanicus, Rhizopus peka, Rhizopus saito, Rhizopus tritici,
 Rhizopus niveus, Rhizopus microsporus, Mitosporic fungi,
 Aureobasidium sap., Acremonium sap., Cercospora sap.,
 Epicoccum sap., Monilia sap., Monilia candida, Monilia
 sitophila, Mycoderma sap., Candida sap., Candida diddensiae,
 Candida edax, Candida etchellsii, Candida kefir, Candida
 krisei, Candida lactosa, Candida lambica, Candida melinii,
 Candida utilis, Candida milleri, Candida mycoderma, Candida
 parapsilosis, Candida obtux, Candida tropicalis, Candida
 valida, Candida versatilis, Candida guilliermondii,
 Rhodotorula sap., Torulopsis sap., Geotrichum sap., Geotrichum
 amycelium, Geotrichum armillariae, Geotrichum asteroides,

C9

Geotrichum bipunctatum, Geotrichum dulcitum, Geotrichum
ericense, Geotrichum fici, Geotrichum flavo-brunneum,
Geotrichum fragrans, Geotrichum gracile, Geotrichum heritum,
Geotrichum klebaknii, Geotrichum penicillatum, Geotrichum
hirtum, Geotrichum pseudocandidum, Geotrichum rectangulatum,
Geotrichum suaveolens, Geotrichum vanryiae, Geotrichum
loubieri, Geotrichum microsporum, Cladosporium sap.,
Trichoderma sap., Trichoderma hamatum, Trichoderma harzianum,
Trichoderma koningii, Trichoderma pseudokoningii, Trichoderma
reesei, Trichoderma virgatum, Trichoderma viride, Oidium sap.,
Alternaria sap., Alternaria alternata, Alternaria tenuis,
Helminthosporium sap., Helminthosporium gramineum,
Helminthosporium sativum, Helminthosporium teres, Aspergillus
sap., Aspergillus ochraceus, Aspergillus nidulans, Aspergillus
versicolor, Aspergillus wentii Group, Aspergillus candidus,
Aspergillus flavus, Aspergillus niger, Aspergillus oryzae
strain ATCC 14156, Penicillium sap., Penicillium aculeatum,
Penicillium citrinum, Penicillium claviforme, Penicillium
funiculosum, Penicillium italicum, Penicillium lanoso-viride,
Penicillium emersonii, Penicillium lilacinum, Penicillium
expansum and mixtures thereof.

C9

Sub-DV

~~58. A method as recited in claim 56, wherein said enzyme
is selected from the group of β -glucanase, xylanase, amylase,
protease, naturally occurring enzymes in the cereal and
combinations thereof.~~

59. A method for the preparation of a malted cereal as
recited in claims 57, 58 or 59 wherein the malting cereal
composition is held with water at a temperature of from about
5°C to about 30°C for a time effective for providing a wetted
cereal having a moisture content of at least about 20 weight
percent.

60. A method for the preparation of a malted cereal as
recited in claim 59 wherein the malting cereal composition is
held with water for about 2 to about 7 days.

Sub F3) 61. A method as recited in claim 60 wherein the activated spores are activated by treatments selected from the group consisting of
cycles of wetting,
cycles of drying,
cycles of wetting and drying,
addition of nutritional supplies or addition of spore elements,
exposure to temperature changes within a range of about 0° to about 80°C,
exposure to changes in pH within a pH range of about 2.0 to about 8.0 to obtain spores where the size of the spores is increased by a factor between about 1.2 and about 10 over their dormant size and/or the spores have one or more germ tubes per spore, and mixtures thereof.

62. A method for the preparation of a malted cereal as recited in claim 61, wherein the activated spores are being present in an amount of from about 1×10^2 to about 1×10^7 per gram of air dry cereal.

C9

63. A method for preparation of a malted cereal as recited in claim 59 wherein the cereal is barley.

Sub F4)

64. A method for the preparation of a malted barley, the method comprising:

mixing activated spores, a barley and water to provide a malting barley composition, the activated spores being present in an amount of at least about 1×10^2 per gram of air dry barley to provide a malting barley composition;

holding the malting barley composition at a temperature of from about 5°C to about 30°C for a time effective for providing a wetted barley having a moisture content of at least about 20 weight percent,

the activated spores increasing an activity of an enzyme that is present in the barley used during said malting method, the activated spores being present in the malting barley composition in an amount which is effective for providing the

Sub F4 malted barley with the increased enzyme activity, the increased enzyme activity being greater than the enzyme activity which is obtained by a malting process without activated spores, wherein the enzyme is selected from the group of β -glucanase, xylanase, amylase, Protease, naturally occurring enzymes in the barley and combinations thereof, and wherein the activated spores are activated by treatments selected from the group consisting of

- cycles of wetting,
- cycles of drying,
- cycles of wetting and drying,
- addition of nutritional supplies or addition of spore elements,
- exposure to temperature changes within a range of about 0° to about 80°C,
- exposure to changes in pH within a pH range of about 2.0 to about 8.0 to obtain spores where the size of the spores is increased by a factor between about 1.2 and about 10 over their dormant size and/or the spores have one or more germ tubes per spore, and mixtures thereof.

65. A method for the preparation of a malted cereal as recited in claim 64 wherein, the malting barley composition is held with water for about 2 to about 7 days to provide a malted barley with a moisture content of from about 20 weight percent to about to about 60 weight percent.

66. A method for the preparation of a malted barley as recited in claim 64, wherein the activated spores are from the microbes selected from the group consisting of Micrococcus sap., Streptococcus sap., Leuconostoc sap., Pediococcus sap., Pediococcus halophilus, Pediococcus cerevisiae, Pediococcus damnosus, Pediococcus hemophilus, Pediococcus parvulus, Pediococcus soyae, Lactococcus sap., Lactobacillus sap., Lactobacillus acidophilus, Lactobacillus amylovorus, Lactobacillus bavaricus, Lactobacillus bif fermentans, Lactobacillus brevis var lindneri, Lactobacillus casei var casei, Lactobacillus delbrueckii, Lactobacillus delbrueckii

var lactis, *Lactobacillus delbrueckii* var *bulgaricus*,
Lactobacillus fermenti, *Lactobacillus gasserii*, *Lactobacillus*
helveticus, *Lactobacillus hilgardii*, *Lactobacillus reuterii*,
Lactobacillus sake, *Lactobacillus sativorus*, *Lactobacillus*
cremoris, *Lactobacillus kefir*, *Lactobacillus pentoceticus*,
Lactobacillus cellobiosus, *Lactobacillus bruxellensis*,
Lactobacillus buchnerii, *Lactobacillus coryneformis*,
Lactobacillus confusus, *Lactobacillus florentinus*,
Lactobacillus viridescens, *Corynebacterium* sap.,
Propionibacterium sap., *Bifidobacterium* sap., *Streptomyces*
 sap., *Bacillus* sap., *Sporolactobacillus* sap., *Acetobacter*
 sap., *Agrobacterium* sap., *Alcaligenes* sap., *Pseudomonas* sap.,
Pseudomonas amylophilia, *Pseudomonas aeruginosa*, *Pseudomonas*
cocovenenans, *Pseudomonas mexicana*, *Pseudomonas pseudomallei*,
Gluconobacter sap., *Enterobacter* sap., *Erwinia* sap.,
Klebsiella sap., *Proteus* sap., Ascomycota, Dothideales,
Mycosphaerellaceae, *Mycosphaerella* sap., *Venturiaceae*,
Venturia sap., Eurotiales, *Monascaceae*, *Monascus* sap.,
Trichocomaceae, *Emericilla* sap., *Euroteum* sap., *Eupenicillium*
 sap., *Neosartorya* sap., *Talaromyces* sap., *Hypocreales*,
Hypocreaceae, *Hypocrea* sap., *Saccharomycetales*, *Dipodascaceae*,
Dipodascus sap., *Galactomyces* sap., *Endomycetaceae*, *Endomyces*
 sap., *Metschnikowiaceae*, *Guilliermondella* sap.,
Saccharomycetaceae, *Debaryomyces* sap., *Dekkera* sap., *Pichia*
 sap., *Kluyveromyces* sap., *Saccharomyces* sap., *Torulaspora*
 sap., *Zygosaccharomyces* sap., *Saccharomycodaceae*,
Hanseniaspora sap.; *Schizosaccharomycetales*,
Schizosaccharomycetaceae, *Schizosaccharomyces* sap.,
Sordariales, *Chaetomiaceae*, *Chaetomium* sap., *Sordariaceae*,
Neurospora sap., *Zygomycota*, *Mucorales*, *Mucoraceae*, *Absidia*
 sap., *Amylomyces* sap., *Rhizomucor* sap., *Actinomucor* sap.,
Thermomucor sap., *Chlamydomucor* sap., *Mucor* sap., *Mucor*
circinelloides, *Mucor grisecyanus*, *Mucor hiemalis*, *Mucor*
indicus, *Mucor mucedo*, *Mucor piriformis*, *Mucor plumbeus*, *Mucor*
praini, *Mucor pusillus*, *Mucor silvaticus*, *Mucor javanicus*,
Mucor racemosus, *Mucor rouxianus*, *Mucor rouxii*, *Mucor*
aromaticus, *Mucor flavus*, *Mucor miehei*, *Rhizopus* sap.,
Rhizopus arrhizus, *Rhizopus oligosporus*, *Rhizopus oryzae*,

C9

C9 Rhizopus oryzae strain ATCC 4858, Rhizopus oryzae strain ATCC 9363, Rhizopus oryzae strain NRRL 1891, Rhizopus oryzae strain NRRL 1472, Rhizopus stolonifer, Rhizopus thailandensis, Rhizopus formosaensis, Rhizopus chinensis, Rhizopus cohnii, Rhizopus japonicus, Rhizopus nodosus, Rhizopus delemar, Rhizopus acetorinus, Rhizopus chlamydosporus, Rhizopus circinans, Rhizopus javanicus, Rhizopus peka, Rhizopus saito, Rhizopus tritici, Rhizopus niveus, Rhizopus microsporus, Mitosporic fungi, Aureobasidium sap., Acremonium sap., Cercospora sap., Epicoccum sap., Monilia sap., Monilia candida, Monilia sitophila, Mycoderma sap., Candida sap., Candida diddensiae, Candida edax, Candida etchellsii, Candida kefir, Candida krisei, Candida lactosa, Candida lambica, Candida melinii, Candida utilis, Candida milleri, Candida mycoderma, Candida parapsilosis, Candida obtux, Candida tropicalis, Candida valida, Candida versatilis, Candida guilliermondii, Rhodotorula sap., Torulopsis sap., Geotrichum sap., Geotrichum amycelium, Geotrichum armillariae, Geotrichum asteroides, Geotrichum bipunctatum, Geotrichum dulcitur, Geotrichum ericense, Geotrichum fici, Geotrichum flavo-brunneum, Geotrichum fragrans, Geotrichum gracile, Geotrichum heritum, Geotrichum klebaknii, Geotrichum penicillatum, Geotrichum hirtum, Geotrichum pseudocandidum, Geotrichum rectangulatum, Geotrichum suaveolens, Geotrichum vanryiae, Geotrichum loubieri, Geotrichum microsporum, Cladosporium sap., Trichoderma sap., Trichoderma hamatum, Trichoderma harzianum, Trichoderma koningii, Trichoderma pseudokoningii, Trichoderma reesei, Trichoderma virgatum, Trichoderma viride, Oidium sap., Alternaria sap., Alternaria alternata, Alternaria tenuis, Helminthosporium sap., Helminthosporium gramineum, Helminthosporium sativum, Helminthosporium teres, Aspergillus sap., Aspergillus ochraseus, Aspergillus nidulans, Aspergillus versicolor, Aspergillus wentii Group, Aspergillus candidus, Aspergillus flavus, Aspergillus niger, Aspergillus oryzae strain ATCC 14156, Penicillium sap., Penicillium aculeatum, Penicillium citrinum, Penicillium claviforme, Penicillium funiculosum, Penicillium italicum, Penicillium lanoso-viride, Penicillium emersonii, Penicillium lilacinum, Penicillium